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Title: Tail dependence and extreme quantile estimation

Abstract: First we propose a new measure based on conditional Kendall's tau to distinguish between asymptotic independence and asymptotic dependence, which plays an important role in predicting extreme events by using multivariate extreme value theory. Statistical inference for the new tail dependence measure and some real data analyses are studied too. Secondly we propose a new method for estimating the extreme quantiles for a function of several dependent random variables. In contrast to the conventional approach based on extreme value theory, we do not impose the condition that the tail of the underlying distribution admits an approximate parametric form, and our estimation makes use of the full observed data by fitting a vine copula to high dimensional data. A simulation study shows that the proposed new method works well for high dimensional data.